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Environmental Technology Partnerships

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Cooperative Research and Development Agreement With Cold Jet, Inc.

Development and Evaluation of a Pollution Prevention Technology For Surface Cleaning and Decontamination

Participants

This Cooperative Research and Development Agreement (CRADA) brings together Cold Jet, Inc., of Loveland, OH, and the U.S. Environmental Protection Agency's (EPA) Risk Reduction Engineering Laboratory (RREL) in the Office of Environmental Engineering and Technology Demonstration, Office of Research and Development.

Purpose

This CRADA was developed to enhance a dry-ice-particle blasting process for lead paint removal, asbestos abatement, surface cleaning and decontamination from residential and commercial housing, and to demonstrate its effectiveness in these applications.

Background

RREL and Cold Jet are investigating the potential of a dry ice blasting process for decontamination of structural surfaces for lead paint removal, and one evaluating cost, worker safety, and environmental benefits.

Cold Jet has special knowledge in dry ice delivery systems, nozzle designs, particle sizing, exit-stream flux densities and auxiliary technology such as pulsed power systems. RREL has special expertise in characterization of aerosols generated by cleaning debris, efficiency testing for surface cleanliness assessment of worker exposure, personnel protection and contamination control in abatement operations. Cold Jet will develop and RREL will evaluate an air capture system to rapidly remove lead-containing particles and CO₂ to reduce spreading, cross contamination and worker exposure.

This collaborative effort will rapidly and efficiently produce the technical information required to effectively deploy the dry ice and other advanced processes for lead paint removal.

Results

Cold Jet and RREL have identified the potential of utilizing a dry ice blasting process for lead paint removal

from metal and hard wood construction materials and the major environmental, worker safety and cost benefits to be derived from this process. Also, both Cold Jet and RREL have identified the need to expand the field of use for the dry ice process on softwoods such as pines commonly used in construction, and the need to develop point of application particle/collection capabilities, carbon dioxide exhaust and residual lead monitoring capabilities.

Preliminary test results indicate that use on old paint gives fairly rapid removal, with some remaining paint. The cleaned surface has some softer grained paint removed, but may be suitable for refinishing. Additional test and development work is planned.

This is one of more than 50 cooperative research and development agreements EPA has with various U.S. businesses, academic institutions and state and local governments under the Federal Technology Transfer Act of 1986. These agreements serve as a mechanism for the federal government to work with private industry and others to develop new pollution prevention and control technologies and efficiently bring them into the marketplace.

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